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## NEW SPECIES OF NOCTUIDÆ FOR 1910.

No. 2.\*

BY JOHN B. SMITH, SC.D.

Because of the accumulation of material, it has been necessary for me, recently, to rearrange some of my boxes. At every arrangement there are some specimens that do not fit satisfactorily into any named series, and are yet not so obviously different as to warrant the decision that an undescribed species is in hand. These are usually placed as possible varieties or variations to the form to which they seem most nearly allied, and left until further material is received. Sometimes years pass before an odd example is duplicated and, occasionally, around a central species a group of oddities will accumulate until lack of further space makes readjustment necessary.

In the North American species of *Euxoa* we have, among the Noctuidæ, a peculiarly difficult problem. There are a few very well marked species whose standing cannot be questioned, and we have a number of forms more or less constant and more or less local. Every collection from a single locality where large numbers of examples are taken, shows series that obviously belong together and yet vary so greatly that, were they received from different localities and with different dates, would hardly be associated. Almost every such series, however, has some characteristic appearance that is often impossible of description in words; but is readily enough recognized by the eye of experience.

Sometimes, intermingled with such series, an oddity is discovered; it does not differ markedly by any one strong character, but it is obviously—to the eye of experience—something that does not belong there. Once separated and with others associated with it, a distinctive habitus becomes clear and a species is fixed. Of course errors occur, for no

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\* No. 1, See Journal of New York Entomological Society, XVIII, pp. 85-98.

two persons see such series in the same way. What seems a clean association to the student arranging the species and working more or less consciously with a set of leading characters in mind, may seem an obvious misfit to another, seeing with an unbiased eye or with another set of characters in mind. In the same way, what may seem to one a distinctly separate series, may to the other appear a mere variation.

There is no doubt that in every collection of our Agrotids and especially in *Euxoa*, there are mis-identifications and mis-associations, and for much of this confusion I am at least partly responsible.

When collectors send me for determination one or two examples of a species captured by them, I am often unable to match the specimens exactly in my own material. If the specimens come from a region well collected over, I am apt to associate them with the species they most nearly resemble, as probably variations or slight local races. If the material comes from a region faunally distinct from anything nearly allied, I am apt to suspect a new species. Ordinarily I am more likely to assume a variety or a race than a new species, and hence the accumulation of additional material usually adds to the number of species recognizable in my collection. Much less error would occur if collectors would send a series rather than a specimen or two for determination.

In *Euxoa* structural characters so far have been of little assistance. The genitalia in the males are practically alike, or differ in matters of proportion merely, in a manner difficult to define and not convincing when figured. There is some difference in the antennal structure, but that is even more difficult of description in words, and the extent of possible variation has not been determined.

The advantage of a new eye over an old collection was very well illustrated when Mr. F. H. Wolley Dod, of Millarville, Alberta, looked over my material during the early days of 1910. He detected a number of erroneous associations which I had retained and, on the other hand, convinced me that some of my separations were not maintainable. I

had delayed action on some of my separations until Mr. Dod could have the chance to look them over, and now present descriptions of those forms that I still believe are worthy of specific separation. It will be noted that some of the species are based on very old specimens, which had been held as probable forms of others up to the present time.

**Euxoa tepla** n. sp.

Ashen gray, overlying a very pale luteous base. Head dusky. Collar inferiorly whitish, tip white, intervening area deep smoky brown. Primaries with all the usual *4-dentata* maculation very neatly defined. Costal area whitish, s. t. space whitish above. A yellowish streak in sub-median interspace, beyond claviform to the t. p. line or beyond. Basal line geminate, defining lines dark, included space whitish, marked only through the dusky area at base of sub-median interspace. T. a. line geminate, blackish, included space yellowish, with a well-marked outward angle in the sub-median interspace, and a longer acute tooth below vein 1. T. p. line moderately outcurved over cell, and very evenly, parallel with outer margin below it; geminate defining lines broken, strongly denticulate, best marked by the included pale shade. S. t. line white, only a little sinuate, moderately indented on veins 3 and 4 which are obviously rayed; preceded by a series of black, somewhat sagittate spots. Terminal area dusky except at apex. A series of black terminal lunules. A broad yellow line at the base of the gray fringes. Claviform moderate or small, black edged. Orbicular oblique, oblong, irregular, open to the costa, annulate in pale yellowish or gray, filled with luteous brown. Reniform moderate in size, kidney-shaped, black edged, with a pale annulus and a pale luteous filling. Secondaries in both sexes white with a slight smoky tinge. Beneath white, disk of primaries a little darker and with a series of dusky terminal lunules.

Expanse, 1.12 inches=28 mm.

*Hab.*—Colorado (Bruce); Stockton, Utah, IX, 14 (Spalding).

One male, one female, in good condition and almost exactly alike. It is rare that two specimens of different sexes are so nearly alike, even when taken at one time; but here the female is from Colorado, probably near Denver, taken at least a dozen years ago, while the female is from Utah, taken in 1904 or 1905. The resemblance is to *cinereo-pallida*, and with the female only at hand, I associated it with that species. With both sexes at hand, *tepla* stands out dis-

tinctly by its more sharply defined maculation, smaller size and lack of that peculiar rough, powdered appearance, characteristic of the larger form. The male antennæ have the segments well marked, but not drawn out into processes, and the bristle-tufting is distinct.

**Euxoa vertesta** n. sp.

Ground color a very pale luteous, powdered with gray and smoky brown; male on the whole a little darker than the female. Head rather uniformly powdered; palpi paler. Collar with a narrow and rather distinct dusky line inferiorly, and a more diffuse, broader and less distinct line across middle. Thoracic disc and patagia powdery, but without definite maculation. Primaries with all the normal maculation present; but powdery, diffuse and not contrasting or even well defined. Basal line geminate, very close to base, dark gray. T. a. line geminate, broken, a little irregular, but as a whole nearly upright to the internal vein (1), where it makes a long outcurve to inner margin. T. p. line geminate, very narrow, very even, well outcurved over the reniform, and a very little incurved below. A rather well defined median shade line crosses the anterior portion of median space, outcurved over the orbicular and reaching the internal margin with t. a. line. S. t. line of the pale ground, with a well marked "W" on veins 3 and 4, relieved against the darker terminal space and preceded by sagittate dusky marks, which indent the paler s. t. space, giving it a curiously dentate appearance. A series of black terminal lunules. Fringes lined with yellow and smoky. Claviform a small blackish loop with yellowish centre. Orbicular small, round, of the pale ground. Reniform upright, a little constricted, yellowish, with a gray central filling. Secondaries white, with a series of smoky terminal lunules. Beneath white, powdery along costa and at apex. A series of dusky terminal lunules and a small discal spot. The female that I associate with the male above described lacks the pale shading in the s. t. space, and the dentate appearance, although the course of the lines otherwise agrees. The claviform is long and dark filled; the orbicular is elongate ovate and dark filled; the reniform is larger and dark filled, though of the same general shape as in the male. The secondaries are whitish, tinged with smoky.

Expands, 1.20 inches=30 mm.

*Hab.*—Stockton, Utah, September 8, Mr. Spalding.

Only one male and one female, differing somewhat as already noted, but which I nevertheless consider as identical. The female has a little the appearance of a small *orthogonia*, but the male does not recall that species in the least. The antenna in the male is only slightly serrate and fasciculate. The tarsal joints in both sexes are rather conspicuously brown banded.

**Euxoa flutea** n. sp.

Ground color dull fusco-luteous. Collar with a diffuse whitish shade below a distinct black median transverse line; tip whitish. Disc gray, patagia with an obscure sub-margin. Primaries with all the maculation black, broken, incomplete. Costal area whitish to the t. p. line. Basal line marked only by a break in the black longitudinal mark that extends from base to t. a. line below the median vein. T. a. line single, marked by a black spot in cell, a distinct lunule in sub-median interspace, and an obscure lunule below vein 1. T. p. line single, a very little outcurved over cell, rigidly oblique below to the inner margin, consisting of a series of interspaceal blotches which are fairly well defined outwardly, but are inwardly diffuse. S. t. line defined by a few white scales, preceded by a series of black sagittate spots of almost equal size, and arranged in a rigidly oblique series. A lunulate black terminal line, followed by a yellow line at base of fringes. Claviform concolorous, outlined in black, extending half way or more across the median space, a pale streak extending outwardly beyond it through the t. p. line. Orbicular oblique, oval or somewhat elongate, touching the pale costal area, but hardly opening into it; distinctly black ringed, with a narrow white inside edging, centre concolorous. Reniform varying from crescent-shaped to oblong, upright, black ringed with a white inner edging, centre a little paler than ground. Median vein white; veins 3, 4, 6 and 7 rayed, but not prominently so. Secondaries uniformly smoky, yellowish, with white fringes. Beneath smoky, costal region paler and powdery.

Expands, 1.20 inches=30 mm.

*Hab.*—California, Sierra Nevada.

Two females in good condition. One of them has no definite locality, the other is No. 9926 of the Henry Edwards collection, and belongs to the American Museum of Natural History.

The species is undoubtedly mixed in collections with others of the *4-dentata* series. In fact, I have seen examples labelled *4-dentata* and *oblongistigma*. It differs from both by the blotch median lines, and by the remarkably even series of sagittate interspaceal marks that precede and define the s. t. line. In addition, the wings seem unusually short and narrow, in proportion to the very long abdomen, which exceeds the anal angle of secondaries by fully one-third its length.

**Euxoa rabiata** n. sp.

Ground color deep smoky brown, over dull, dark luteous; more or less powdered with whitish. Head concolorous. Collar with a black

line across middle, and that may or may not have some whitish margining scales above or below. Patagia somewhat powdered; a white line across base just behind collar. Disc of thorax somewhat white powdered. Primaries with the usual *4-dentata* maculation fairly well defined. The costa is concolorous; but the costal, sub-costal and median veins are white, and the inception of the median lines is marked by white dots on costa. Cell a little darker around the ordinary spots. Basal line geminate, black, included space yellowish, inwardly oblique below median vein. T. a. line geminate, black, included space luteous, with a small outward angulation in the sub-median interspace and a long outward bend below vein 1. T. p. line geminate, blackish, included space yellowish, slightly lunulate, as a whole almost strictly parallel with outer margin. S. t. line yellowish or whitish, broken, very even in course, indented on veins 3, 4, 6 and 7, which are rayed; the indentation on vein 6 being a little shorter than the rest. Terminal space uniformly dark except at apex. S. t. space a little paler beyond the t. p. line, darkened outwardly; a series of black, sagittate spots before the s. t. line. A series of small black terminal lunules and a yellowish line at the base of the broad fringes. Claviform narrow, extending half-way across the median space, black lined, concolorous, followed by a yellowish streak to the t. p. line. Orbicular round or nearly so, black ringed outside of a white annulus, centre yellowish. Reniform kidney-shaped, not sharply outlined, edged with black scales, with a whitish inward margin, centre yellowish with darker markings. Secondaries white, veins more or less dusky, a vague discal lunule and a narrow smoky outer border. Beneath; primaries smoky, powdery, with a darker extra-median line; secondaries white, powdery along costa, with a small black discal dot and a very narrow, incomplete, dusky outer line.

Expands, 1.12-1.25 inches=28-31 mm.

*Hab.*—Volga, South Dakota; Colorado; Calgary, Canada, VIII, 29.

Six males and two females in fair condition. One male is out of the Hulst collection from Colorado, one female from Calgary is from Mr. Dod, the others are out of Judge Truman's material. The specimens are all very much alike, and differ chiefly according to their age and state of preservation. The resemblance is to *rumatana*, also from South Dakota, from which it differs by the absence of fuscous and luteous shadings and the white secondaries, and to *niveilinea*, which is a larger, brighter colored species, and has the white line on patagia better defined, oblique, and not so near the collar.

The antennæ of male have the sides of the joints slightly drawn out, and the bristle-tufting well marked.

**Euxoa brevisiriga** n. sp.

Ashen gray with a tendency to reddish, more or less powdery. Head black and white mottled, without distinct markings. Collar with a series of alternate blackish and paler lines, the dark lines broadening upward, the collar white tipped. Patagia dusky, with a darker sub-marginal shade and paler edge. Disc mottled gray and whitish. Primaries with a dusky shading over costal region, terminal area all smoky brown. Median lines barely marked on costal region only, else obsolete. Basal line traceable, geminate. S. t. line marked by the sharp inner edge of the dusky terminal space; decidedly toothed on veins 3 and 4, and a little indented on veins 6 and 7. A series of black terminal lunules, followed by a pale yellowish line at base of fringes. On the sub-costal vein at base there is a short blackish streak which is edged by whitish. The veins are marked by blackish scales, and on veins 3 and 4 there are also pale shades giving a rayed appearance, characteristic of the *4-dentata* series. Claviform faintly and incompletely outlined by darker brown scales. Orbicular oval, oblique, moderate in size, of the pale ground, narrowly dark edged. Reniform narrow, almost crescent-shaped, of the pale ground color, outwardly with a reddish shading. Secondaries white, veins a little yellowish, a narrow terminal line smoky. Beneath white, blackish powdered along the costal margin and at apical third of primaries, and along costal margin only of secondaries; all wings with a small blackish discal lunule and a lunulate terminal line.

Expanse, 1.35-1.50 inches=34-37 mm.

*Hab.*—Colorado, probably near Denver.

I have two males, in good condition, collected years ago by Mr. David Bruce. The specimens have been tentatively associated with *brevipennis*, and agree with that species in the robust thorax and comparatively short abdomen. They differ in the almost complete obsolescence of the median lines and the uniformly sharply defined dusky terminal space. The antennæ have the joints laterally produced or very shortly pectinated, each process with a short stout bristle which is set with shorter hair. A characteristic feature is the short dark dash at base of subcostal, set in a pale shading.

**Euxoa angulirena** n. sp.

Ground color dull smoky fuscous. Head with a narrow paler line, below antennæ, Collar with a distinct black median line and a white tip. Patagia darker, tending to blackish, edged with gray. Disc of



thorax grayish. Primaries with ornamentation well defined. Costal area paler to the reniform; sub-costal whitish to the orbicular. Basal line marked by geminate blackish marks on costa and in the sub-median interspace; a narrow blackish line connecting the lower spots with the t. a. line. T. a. line geminate, blackish, defined only in the sub-median interspace. T. p. line marked by geminate spots on costa above reniform, outcurved closely over this spot, then rather evenly oblique, single, broken, to the inner margin. S. t. line pale, powdery, irregular, broken, emphasized by the series of preceding black spots, some of which are sagittate; outwardly a little indented on veins 3 and 4, and a little less on veins 6 and 7. A narrow, black, slightly lunate terminal line, followed by a yellow line at base of fringes. Claviform a little darker than ground, black edged, extending across the median space and touching the t. p. line. Cell around and between the ordinary spots a little darker. Orbicular oblong, open to the costa, drawn to an angle posteriorly, paler than ground, a whitish line within the black defining edge. Reniform narrow, kidney-shaped, the inner edge drawn out into a little tooth or angle toward the outward angle of orbicular, narrowly black-ringed, within this a somewhat diffuse whitish shade; centre a little paler than ground, with a rusty yellowish outer line. Veins 3, 4, 6 and 7 are dark marked and a little rayed in appearance. Secondaries smoky, veins a little darker, fringes white. Beneath white; primaries smoky on disk, else coarsely powdered with blackish; veins dusky and a dusky discal lunule; secondaries powdery along costa, with an extra-median powdery line and a small discal spot.

Expands, 1.50 inches=37 mm.

*Hab.*—Colorado (Bruce).

A single good female specimen from the Bruce collection. It is another one of those forms easily confused with *brevipennis*, but not so robust, and with proportionately smaller body and more ample wings. The form of the ordinary spots is characteristic and unlike that of any other species known to me.

### **Euxoa poncha** n. sp.

Ground color a very pale whitish yellow, tending to creamy. Head with a blackish transverse line inferiorly, palpi dusky at sides. Head and thorax otherwise without maculation. Primaries with all the maculation broken and marked by dusky powderings, more complete in the female than in the male. Basal line geminate, marked on costa and below median vein only. T. a. line geminate, the parts about equally developed, upright as a whole, slightly outcurved in the interspaces. T. p. line geminate, parallel with outer margin, almost rigid;

inner line a little denticulate on the veins, outer vague and diffuse, even. S. t. line concolorous, a little irregular, marked by a narrow blackish preceding shade which tends to become broken and is only a little better marked on costa. A series of small black terminal lunules. Median line fairly obvious, narrow, extending from costa obliquely through the lower half of reniform so as to darken the outer border and lower part of spot, thence close to and parallel with t. p. line to the inner margin. Orbicular concolorous, vaguely defined by a slightly paler ring. Reniform kidney-shaped moderate in size, vaguely defined by a somewhat paler ring, except where the median shade darkens and emphasizes it. Secondaries snow-white in both sexes; in the male with a narrow smoky terminal line, in the female with a vague, diffuse, narrow sub-marginal band. Beneath white, almost immaculate, a little dusky powdering along costa of secondaries, a tendency to a discal spot and an extra-median line in primaries.

Expands, 1.60-1.65 inches=40-41 mm.

*Hab.*—Denver, Ft. Collins, Poncha Springs, Colorado, in July.

Two males and one female in good condition and very much alike. These also are old specimens, received from Mr. David Bruce and Prof. C. P. Gillette many years ago, and they have, until recently, been associated with *E. medialis* in my collection. That species, however, has the antennæ of the male very slightly serrate and fasciculate, while in *poncha* the lateral processes are long and in the nature of short branches or pectinations. In general the maculation is very like that of *truva*; but the ground lacks all trace of reddish or carneous gray and, in the female, the secondaries are white, as are those of the male. There are other differences in the course of the lines, and especially the median shade that may be noted by comparing the descriptions; but the ground color and sexual differences will serve most readily for that purpose.

***Euxoa truva* n. sp.**

Ground color reddish-gray, with more or less black powdering. Front with a narrow black transverse line below the middle, sides of palpi dusky. Collar with a reddish line below the tip and a single line near the margin of patagia. Primaries with all the lines present, but much relieved and more or less fragmentary. Basal line geminate, blackish, broken, outwardly bent on the median vein. T. a. line geminate, the component parts about equally developed, tending to

obsolescence, a little outcurved as a whole and outcurved between the veins. T. p. line geminate, rather abruptly bent outward below costa and then very evenly oblique to the inner margin. The inner line tends to be crenulated, only a little darker than ground, the outer tends to become broader, even, and almost like a band with rather diffuse edges. S. t. line concolorous, a little irregular, marked by the blackish powdering in the terminal space, and a variably obvious preceding shade which forms a more definite mark on the costa. Median shade forms the most obvious feature of the wing; it is rather narrow, well defined, but without sharp edges, crosses outwardly from costa between ordinary spots to the lower edge of the reniform, and then bends inwardly, parallel with and rather close to the t. p. line to the inner margin. Claviform not traceable. Orbicular round or nearly so, moderate in size, feebly defined by a slightly paler annulus, centrally with dark powderings. Reniform kidney-shaped, of good size, defined by a slightly paler ring, inferiorly dusky. There is a series of very small black terminal lunules. Secondaries pure white in the male, uniformly smoky, with white fringes in the female. Beneath white in the male, with a dusky lunule on primaries; iridescent smoky, without marks in the female.

Expands, 1.30-1.60 inches=33-40 mm.

*Hab.*—Denver and Poncha Springs, Colorado; July and September.

Two males and one female in good condition. Specimens received from Mr. Bruce many years ago and placed with *caenis* Grt., which the species in a general way resembles. It is more powdery than that species however, and the course of the lines is different; its resemblance is really more nearly to *medialis*, and I have no doubt that specimens of this form are in collection as *caenis* and as *medialis*. It does not seem to be common, judging by the small number that I have had.

### ***Euxoa lenola* n. sp.**

Ground color a rather dull leather brown, more or less clouded with smoky. Palpi chocolate brown at sides. Collar dusky at extreme base and, in well preserved specimens, a narrow gray line at tip. Thoracic vestiture with tuftings gray tipped; else concolorous. Primaries at first blush seem uniformly dull brown, but on careful examination all the normal maculation can be traced. The lines are not at all relieved, however, and scarcely darker than ground. The t. a. is upright or nearly so, with slight outcurve in the interspaces. T. p. nearly parallel with outer margin, slightly crenulate. S. t. a little irregular. Claviform not traceable in any specimen. Orbicular round, moderate in size, with a faintly paler annulus; centre a trifle darker. Reniform kidney-shaped, a little darker, more or less defined by yel-

lowish scales. Secondaries white with a slight yellowish tinge in the male, pale yellowish smoky in the female. Beneath whitish, with a rather uniform sparse dark powdering.

Expand, 1.52-1.72 inches=38-43 mm.

*Hab.*—Glenwood Springs, Colorado, in August (Barnes); Ft. Collins, Colorado (Gillette); Hot Springs, New Mexico, 7000 feet (Hulst).

Two males and three females in good condition and all very much alike except in size. The species has been confused with *caenis* and *gagates*, but more generally with the former. It is duller and more powdery than either, the maculation is barely traceable, there is hardly a trace of carneau gray, and the primaries are a little more pointed.

The joints of the male antennæ are laterally produced into very short branches, at the tip of which is a bristly process set with finer, stiff hair.

### ***Euxoa biformata* n. sp.**

Ground color rusty red-brown with a more or less marked smoky suffusion. Head and thorax concolorous, palpi chocolate brown at the sides. Primaries in the male with all the transverse maculation practically lost in the smoky suffusion except for darker costal marks. In the female all the maculation is distinctly traceable though not well marked. Basal line marked by geminate spots on costa, else obsolete. T. a. line geminate on costa, thence only the outer part traceable; nearly upright to internal vein, below which it makes a long outcurve to margin. T. p. line geminate, very even, almost rigidly parallel with outer margin; inner portion very narrow, smoky, continuous; outer a series of short blackish venular marks. A vague, smoky, diffuse, irregular median shade through the outer portion of median space. S. t. line irregular, marked only by the slightly darker terminal space. In both sexes there is a series of very small dusky terminal dots. In both sexes the claviform is wanting, and the ordinary spots are obscure, barely traced out by a scant powdering of yellow scales. Orbicular moderate in size, round. Reniform large, kidney-shaped. Secondaries smoky in both sexes, a little darker in the female, veins smoky throughout. Beneath white, powdery along costal region and toward apex. Legs dusky, tibiae rather conspicuously pale-marked at tip.

Expend, 1.55-1.80 inches=39-45 mm.

*Hab.*—Sierra Nevada, California.

One male, the smaller, and one female, both in excellent condition. The specimens contain no data as to their point

of origin or date; but the labels are identical, and despite the difference in appearance obviously belong together. The resemblance is to *mimalonis*, but the species is much more robust and the vestiture is much denser and heavier.

The male antennæ have small, lateral, conical processes with tufts of short bristly hair at tip.

***Euxoa cervinea* n. sp.**

Ground color pale ashen-gray with a vinous red tinge, more or less powdery. Head and thorax concolorous; collar with a vague carneous median line, else no maculation. Primaries with the normal maculation well defined though never conspicuous, traceable in most instances and almost completely obsolete in occasional specimens. Basal line geminate, powdery, blackish, rarely present. T. a. line geminate, inner element rarely present, so that usually it appears simple; outwardly oblique, a little outcurved in the interspaces to vein 1, and below that with a long outcurve. T. p. line single, crenulate, evenly outcurved over cell, a very little incurved below, forming the most persistent feature of the transverse maculation. S. t. line concolorous, almost evenly parallel with outer margin, defined only by differences in shading between terminal and s. t. spaces, and these shadings are not alike in any two examples, the line varies equally in distinctness of definition. A narrow, broken blackish terminal line. Claviform small, concolorous, very incompletely defined by dusky scales. Orbicular concolorous, round or oval, varying in size, incompletely defined, the cell between it and reniform usually darker, reddish or smoky. Reniform large, extending well below median vein, inferiorly dusky, a little constricted, incompletely defined. A dusky median shade line extends obliquely from costa between the ordinary spots; invades the lower part of reniform and then runs parallel with and rather close to t. p. line to the inner margin. Secondaries dull smoky gray in both sexes, with a more or less obvious discal lunule and a dusky sub-marginal line. Beneath grayish-white, powdery, with a well-marked extra-median line and discal spot on all wings.

Expands, 1.25-1.35 inches=31-34 mm.

*Hab.*—Bozeman, Montana, Aug. 7-31; Vancouver, B. C., July 16; Banff, B. C., Aug. 10; Calgary, Alta., Aug. 30.

Five males, one female, in good to fair condition. This is a species which I had confused with the Californian *rena*, and which is probably the species referred to under that name in Mr. Dod's Calgary list. In specimens with the transverse maculation lost and the space between the ordinary spots reddish, the resemblance to *rena* is striking; but with a better series at hand the resemblance tends to *dissona*

in specimens with single median lines and reddish shadings. Finally, with fully marked individuals without much reddish, a resemblance to *munis* becomes obvious, and that is the real relationship of the species. *Rena* is really not a near ally at all, and is rather of the *tessellata* series. *Dissona*, *cervinea* and *munis* are allies, and will require further study from larger material to bring out fully the differences between them.

Mr. Dod was good enough to call my attention to the fact that the Calgary species was not identical with the Californian. I have only one Calgary example before me, and that looks as though there might be yet another species involved.

***Euxoa indensa* n. sp.**

Ground color a bright mouse-gray, more or less tinged with reddish or smoky. Head and thorax without definite maculation; head usually gray powdered; thorax reddish or brown tinged, as dark or darker than any other shade on the insect, the scales slightly gray-tipped. Primaries with all the normal maculation distinctly and even brilliantly defined. The ground color is a clean gray, the cell intensely black before and between the ordinary spots and the outer third of median space is reddish, rusty or smoky. Basal line geminate, black, cleanly defined. T. a. line geminate, black from costa to median vein, blackish or brown below that; outwardly oblique and a little outcurved between veins. T. p. line geminate, black on costa, abruptly bent over cell, then even, parallel with outer margin; inner part lunulate, well marked, outer portion even, powdery, tending to become lost. S. t. line of the ground color, only a little irregular, more or less defined by the darker terminal space and by a variably developed preceding dusky shade. A very narrow, lunate, black terminal line. Fringes carneous, long and dense. Claviform small, barely indicated. Orbicular large, gray, not closed above or below, clearly defined by the black filling of median space. Reniform large, broad, kidney-shaped, with a dark central crescent and a more or less obvious carneous shading. Secondaries soiled yellowish white, with a smoky outer border and veins in the male; smoky, with whitish fringes in the female. Beneath whitish, powdery, both wings with more or less complete extra-median line and a dark discal lunule; primaries more or less dusky on disc.

Expands, 1.25-1.35 inches=31-34 mm.

*Hab.*—Volga, South Dakota (Truman); Cartwright, Manitoba, VIII, 19 (Heath); Brandon, Manitoba, VII, 14 (Hannham).

One male and three females, all in good condition. The

species resembles *verticalis* Grt., in general appearance and type of maculation; but is narrower winged, the primaries more obtuse and the maculation more complete and clearly defined. A somewhat characteristic feature is the darkened outer portion of the median space, which in *verticalis* is concolorous. In the specimens before me the single male has more red than any female, while the females differ in the amount of shading in the s. t. and terminal spaces and the amount of contrast between the lines and shades; but always the specimens are very neatly and cleanly marked.

The male antennæ are serrate and fasciculate, the lateral processes being well marked and conical, but not forming true branches.

***Fishia instruta* n. sp.**

Pale ashen-gray, with a bluish tint, very even; markings narrowly and rather well defined, but not contrasting. Collar with a narrow, clear-cut median black line. Patagia with an indicated sub-marginal line. Primaries with a narrow black basal streak which does not reach the t. a. line. T. a. line single, narrow, black, preceded by white scales, strongly dentate in the interspaces, the largest tooth in the sub-median interspace, and to it is attached the concolorous, black-edged claviform, which extends across the median space and reaches the in-curve of the t. p. line. T. p. line black or blackish, less defined and more diffuse toward costa, outwardly dentate on the veins, incurved in the sub-median interspace, where it is most distinct and preceded by white scales. S. t. line marked by a series of three to five irregularly placed short, black, interspaceal dashes, some before and some beyond a series of obscure, whitish dots. No terminal line. Fringes concolorous, cut with yellowish at the ends of the veins. Orbicular large, oblique, oval, narrowly black ringed, concolorous or very slightly paler. Reniform large, kidney-shaped, inwardly black-edged, with white or whitish scales forming an inner, more or less defined ring; it may be concolorous or a little paler. Secondaries white, powdery, with a broken punctiform dusky extra-median line, a vague discal spot and a well-marked blackish, lunulate terminal line. Beneath whitish, rather evenly powdery, with a well-marked small discal spot on all wings and a vaguely marked extra-median line.

Expands, 1.50-1.58 inches=27-29 mm.

*Hab.*—De Clair, Manitoba, Sept. 3-15.

Four males, in good condition, collector unknown. The species resembles *yosemite* Grt., in the uniform coloration of primaries; but these are gray, without trace of brown, and the secondaries are white, without trace of fuscous. *Yose-*

*mite* male and female were represented in the same collection, and were easily separated out. Maculation almost exactly like *yosemite*, but not so well marked. The possibility of a well marked variety is not excluded.

**Mamestra chunka** n. sp.

Body and primaries smoky fuscous. Head with obscure, dark, frontal lines. Collar with two narrow blackish transverse lines, one above middle and one just below tip. Patagia with black sub-margin. Primaries with all the maculation well defined but not contrasting. Basal line broken, black, geminate, outer portion obscure, included space concolorous. T. a. line geminate, inner portion brown, rather even, outer black, a little outcurved in the interspaces, tending to become broken on the veins. Resting on the inner margin, and against the lower portion of the t. a. line there is a dark smoky blotch in the basal space that is inferiorly marked by a short black streak. T. p. line rather abruptly bent over cell, almost evenly oblique below this, geminate, inner line black, slender, a little lunulate, outer line brown, slender, even, very close to inner so as to leave a very narrow included space. S. t. line pale, yellowish, outwardly dentate to the margins on veins 3 and 4, obscured toward apex by the pale apical shade. A series of black terminal lunules. Fringes cut with yellowish opposite veins. The s. t. space is variably shaded with gray, and gets a somewhat strigate appearance from the darker veins, emphasized by the long outward dents of the s. t. line and by a series of two large and several small black sagittate preceding spots. Claviform rather large, pointed, extending nearly across the median space, often dark filled. Orbicular narrowly elongate, small, with a pale outline. Reniform large, kidney-shaped, with the lower lobe extending outwardly, more or less distinctly black margined, and usually dusky filled at least inferiorly. Secondaries pale at base, darkening to a broad dark outer margin; the veins smoky, and a dark discal lunule obvious. Beneath, all wings with a blackish extra-median line and discal lunules.

Expands, 1.35-1.32 inches=31-32 mm.

*Hab.*—Aweme, Manitoba, V, 13, 22; V, 20, Mr. Criddle.

Three good males, one of them belonging to Mr. Dod. The antennæ have the joints distinctly marked, with tufts of short soft ciliations laterally. The general habitus is like *crotchii*, but it is even more robust, shorter winged and heavier bodied, with a clean-cut maculation. There is, indeed, a tendency toward *farnhami*, and it is not improbable that some of the better marked forms have been placed under that name.



**Mamestra ortruda** n. sp.

Ground color a rather even pinkish luteous, on which the maculation of primaries is prominently and contrastingly written. Front protuberent, convex, concolorous. Collar with an obscure dark transverse line above the middle. Disc of thorax with rather well defined anterior and posterior tufts; patagia a little powdered, sometimes with an obscure, dusky sub-margin. Abdomen rusty yellowish. Primaries with all the markings well-written, essentially like those of *albifusa*. Basal line geminate, black, interrupted on median vein. T. a. line geminate, black, outer portion best marked and defined, inner portion preceded by a diffuse blackish shade varying in extent in the specimens; in course rather evenly and not greatly outcurved. T. p. line geminate, rather obscure, inner portion lunuate, smoky, outer portion more even and less obvious—tending, indeed, to become lost; in course abruptly bent over cell and then very even and almost direct to inner margin. S. t. line paler than ground color, irregular, forming outward dents that reach the outer margin on veins 3 and 4, preceded by conspicuous black sagittate marks in the middle of its course. Terminal space a little darker than the ground. A series of black terminal lunules. A slender yellow line at base of the dusky fringes which are cut with yellow opposite the veins. Claviform short, broad, blackish-filled, conspicuous. Orbicular rather small, a little ovate, oblique, pale-ringed, concolorous. Reniform very large, kidney-shaped, or a little constricted, narrowly outlined in black, with an incomplete inner pale ring, smoky filled, with or without a pale lunule. Secondaries yellowish, veins blackish, a broad blackish outer border which is inwardly diffuse; a smoky discal lunule; a dusky more or less obvious lunate terminal line. Beneath yellowish, powdery, with a broad blackish subterminal band which is sharply limited outward by the paler terminal area; primaries with a large dark discal lunule, secondaries with a small dark discal spot.

Expands, 1.32–1.48 inches=33–37 mm.

*Hab.*—Denver and Glenwood Springs, Colorado, April, June, July and August.

Five males and three females in fair to good condition, and all very much alike in general appearance. This species was first received by me many years ago from Mr. David Bruce, and has since then been sent in by Dr. Barnes, to whom five of the examples under consideration belong. The species is nearest to *obesula* in general appearance and size, with a very decided leaning toward *farnhami* in color and maculation, which latter is, nevertheless, on the whole more like that of *albifusa* than of any other species.